

23 process for creating an instability and receptivity mechanism for rapid and homogeneous mixing of one or more fluids comprising:

- (a) introducing one or more fluids into a mixing chamber having a geometry for producing (enhancing) corner flows in said mixing chamber for creating [streamwise] secondary corner vortices, and having one or more inlets for receiving said fluids and at least one splitter plate having a trailing edge and configured to create corners in said mixing chamber and to create a shear layer between said fluids;
- (b) separating said fluids on entrance into said mixing chamber by said splitter plate creating primary vortices at said trailing edge of said splitter plate;
- (c) forcing said shear layer between said fluids through the periodic application of a narrow frequency band [within 10 Hz], said shear layers having a [specific] high receptivity corresponding to rapid mixing to said narrow frequency band, which can be found through tuning the frequency of the forcing actuators, and is independent of said fluid's velocity into said mixing chamber; and
- (d) creating enhanced [streamwise] secondary vortices for enhanced mixing through the interaction between vortices due to said corners and said primary vortices.

24 process for creating a receptivity mechanism as claimed in claim wherein said frequency band is generated by a means selected from the group consisting of [a forced flap in said trailing edge of at least one splitter plate,] a forced membrane, a piston pump and a periodic valve upstream of said trailing edge of at least one splitter plate for forcing the flow of at least one fluid stream.